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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/821,818

04/08/2004

Max W. Durney

A-69466-5/RBC/VEJ

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EXAMINER

THORNEWELL, KIMBERLY A

ART UNIT

PAPER NUMBER

2128

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/23/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/821,818	DURNEY ET AL.	
	Examiner	Art Unit	
	Kimberly Thornewell	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/12/06, 8/30/04, 6/30/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-40 have been presented for examination.

Priority

2. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged.

Information Disclosure Statement

3. The information disclosure statements (IDS) submitted on 6/30/2004, 8/30/2004, and 9/12/2006 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet **within the range of 50 to 150 words**. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because it runs over 150 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2-4, 11-13, 15-17, 21, 24-26, 28-30, and 38-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2-4, 11, 15-17, 24, 28-30, and 38 contain the use of “and/or” language. It is unclear whether the Applicant intends the limitations of the claims to be present in their entirety, or in the alternative.

Claim 21 recites the limitation “said CAD/CAM system” in line 3. There is insufficient antecedent basis for this limitation in the claim.

Any rejected claims not specifically discussed above are rejected by virtue of their dependence.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 14-26 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 14-26 are directed to computer program products in computer-readable media for use in a data processing system for designing a desired fold line for a non-crushable sheet of material. However, these program products are interpreted as software,

per se, as they do not produce a tangible result. Regarding a “tangible result,” MPEP 2106 reads as follows:

The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a 35 U.S.C. 101 judicial exception, in that *the process claim must set forth a practical application* of that judicial exception to produce a real-world result.

The claims do not meet the tangible result requirement because although the intended use of the computer program product is for designing fold lines in sheet material, the Applicant has not set forth a tangible, real-world application of the invention.

Moreover, the specification fails to provide antecedent bases for the limitation “computer-readable medium.” Without antecedent basis for this limitation, it is believed that the “computer-readable medium” covers signals, waves and other forms of transmission media that carry instructions. Therefore, this limitation is not limited to physical articles or objects which constitute a manufacture within the meaning of 35 USC 101 and enable any functionality of the instructions carried thereby to act as a computer component and realize their functionality. As such, the claim is not limited to statutory subject matter and is therefore non-statutory.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gitlin et al., US Patent no. 6,640,605, with the effective filing date of 4/4/2002, and with priority to application 09/492,994, filed on 1/27/2000, and provisional application 60/117,566, filed on 1/27/1999, in view of Gupta et al., US Patent no. 6,233,538.

As per claims 1, 14, 27,

Gitlin discloses a method, and apparatus for designing a desired fold line for a non-crushable sheet of material comprising:

- Defining said desired fold line in a parent plane (**figure 8 reference line A**); and
- Populating said fold line with a fold geometry including a series of cut zones (**figure 8 reference 14**) that define a series of connected zones (**figure 8 spaces between cut zones 14**) configured and positioned relative to said fold line whereby upon folding said material along said fold line produces edge-to-face engagement of said material on opposite sides of the cut zones (**figure 9 edges 34 on face 10L**). *The corresponding text to the figures can be located at column 6 lines 30-51.*

Although Gitlin discloses using a computer for forming cut zones (column 1 lines 44-48), the reference does not disclose expressly the fold line being on a parent plane in a drawing system. Gupta discloses a method, apparatus and computer readable medium for designing a desired fold line for a non-crushable sheet of material (**figure 1A**) comprising means and steps for defining a fold line in a parent plane of a drawing system (**figure 8, column 17 lines 36-46**).

It would have been obvious to one of ordinary skill in the art of sheet metal bending, at the time of the present invention, to modify Gitlin's sheet metal bending method with Gupta's CAD metal bending system. The motivation for doing so would have been to increase flexibility of manufacturing systems by providing a planning technique for sheet metal bending operations (Gupta column 3 line 63-column 4 line 3).

As per claims 2, 15, 28,

Gitlin discloses shaping the cut zones to define the connected zones that are along the fold line (**column 8 lines 53-58**) so as to enable the edge-to-face engagement upon folding of the material along the fold line (**figure 10**).

As per claims 3, 16, 29,

Gitlin discloses reshaping at least one of the cut zones to displace at least one of the connected zones (**figure 14, column 8 line 64-column 9 line 3**).

As per claims 4, 17, 30,

Gitlin discloses detecting weaknesses in the parent plane and reshaping at least one of the connected zones to displace at least one of the connected zones based on localized fold geometry adjacent the weakness zones (**column 8 lines 46-52, taught as shaping so as to not distort or buckle the sheet metal**).

As per claims 5, 18, 31,

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Gitlin discloses the populating step defining the cut zones and connected zones to resist fracture upon folding the material along the fold line (**column 8 lines 58-63**, *eliminating buckling*).

As per claims 6, 19, 32,

Gitlin discloses defining the fold geometry being based upon the material thickness (**column 6 lines 30-34**).

As per claim 33,

Gupta discloses memory means storing a plurality of fold geometries based on material (**column 13 lines 36-39**).

As per claims 7, 20, 34,

Gupta discloses the method being implemented as an adjunct of a CAD/CAM system (**column 9 lines 56-58**) having fold and unfold (**abstract**) capabilities.

As per claims 8, 21, 35,

Gupta discloses providing visualization on the CAD system that displays the cut zones and connected zones geometry as populated along the fold line (**figure 8**).

As per claims 9, 22, 36,

Gupta discloses the method being implemented as an adjunct of a CAD/CAM system (column 9 lines 56-58) having fold and unfold (**abstract**) capabilities.

As per claims 10, 23, 37,

Gitlin discloses designing a creased sheet-material product including creased features, wherein the cut zones and the connected zones are superimposed upon the creased features (**figure 8**).

12. Claims 11-13, 24-26, and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al., US Patent no. 6,233,538, in view of Gitlin et al., US Patent no. 6,640,605, with the effective filing date of 4/4/2002, and with priority to application 09/492,994, filed on 1/27/2000, and provisional application 60/117,566, filed on 1/27/1999.

As per claims 11, 24, 38,

Gupta discloses a method, computer program product, and apparatus for designing a desired fold line for a non-crushable sheet of material comprising:

- Storing a plurality of cut zone configurations and connected zone configurations having differing shapes (**column 13 lines 36-39**);
- Defining a desired fold line in a parent plane on a drawing system (**figure 8, column 17 lines 36-46**);
- Selecting a preferred cut zone having a desired shape and scale (**figure 7, column 17 lines 19-27**);

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- Locating a preferred fold geometry along said fold line, said preferred fold geometry including said selected cut zone and said selected connected zone (**figure 7, bend lines b1-b5**); and

Although Gupta discloses reshaping the fold geometry to displace connected zones, the reference does not disclose expressly the folding of the material along the fold line producing edge-to-face engagement of the material on opposite sides of the cut zones. Gitlin discloses a method and apparatus for determining bend lines on a sheet of material containing cut zones and connected zones such that upon folding the material along the fold line, an edge to face engagement of the material on opposite sides of the cut zone is produced (**figure 10**).

It would have been obvious to one of ordinary skill in the art of sheet metal bending, at the time of the present invention, to modify Gupta's sheet metal bending CAD system with Gitlin's sheet metal bending technique. The motivation for doing so would have been to increase durability of the sheet metal by using a bending sequence that would eliminate buckling (Gitlin column 8 lines 53-63).

As per claims 12, 25, 39,

Gitlin discloses providing a fastening mechanism for permitting connection of a first plane of said material with a second plane lapped with the first plane in association with said fold line (**figure 4A, holes in side planes permit lapping with second plane**).

As per claims 13, 26, 40,

Gitlin discloses the fastening mechanism being holes (**figure 4A, holes in side planes**).

Conclusion

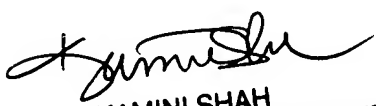
13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US Patent no. 6,490,498, issued to Takagi et al. on 12/3/2002.
- US Patent no. 5,587,914, issued to Conradson et al. on 12/24/1996.
- US Patent no. 5,205,476, issued to Sorenson on 4/27/1993.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly Thornewell whose telephone number is (571)272-6543. The examiner can normally be reached on 9am-5:30pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571)272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


KAMINI SHAH
SUPERVISORY PATENT EXAMINER

Kimberly A. Thornewell

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Patent Examiner
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